

X-RAYS DIFFRACTION ANALYSES OF THE CVD DIAMOND FILM DEPOSITED ON THE Ti6Al4V ALLOY WITH THE ADDITION OF CF₄ IN METHANE-HYDROGEN MIXTURE

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Abstract

The analyses by X-Rays diffraction for the bulks with the CVD diamond film had the purpose of verify some alterations in the concentrations of carbides and of the elements Ti, Al and V, seen that the action of the fluorine in general alters the chemical composition and physics of the surface of the substrate. The difratogram with the main peaks of the titanium and of the aluminum for the diamond film deposited under the temperature of 600°C, with the time of 2 hours showed that remains a titanium peak in $2\theta = 35,2^\circ$. Also, the titanium carbide, TiC, is present in the peaks located in $2\theta = 35,9^\circ$ and $41,6^\circ$. The diamond peak also is present in 44° . The difratogram with the main peaks of the titanium and of the aluminum for the diamond film deposited under the temperature of 600 °C, with the time of 5 hours presented the titanium peak, TiC peak, and still of the a lot diamond presenting resemblance with the previous results. The difratogram with the main peaks of the titanium and of the aluminum for the diamond film deposited under the temperature of 600 °C, with the time of 7 hours presents a titanium peak in 2θ with value of $35,2^\circ$. The titanium carbide, TiC, is present in 2θ located to $35,9^\circ$ and $41,6^\circ$, where the intensity of the first peak has a value like the main one. The peak of the diamond appears in $44,83^\circ$ and $76,19^\circ$. The main peak of the diamond is bigger compared with the of orientation (220). The diamond is purer than him deposited with the mixture of methane and hidrogênio without utilization of the CF₄.

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